

Appendix D - Southern Rockies Lynx Linkage Areas

The goal of linkage areas is to ensure population viability through population connectivity.

Linkage areas are **areas of movement opportunities**. They exist on the landscape and can be maintained or lost by management activities or developments. They are not “corridors” which imply only travel routes, they are broad areas of habitat where animals can find **food, shelter and security**.

The LCAS defines Linkage areas as: *“Habitat that provides landscape connectivity between blocks of habitat. Linkage areas occur both within and between geographic areas, where blocks of lynx habitat are separated by intervening areas of non-habitat such as basins, valleys, agricultural lands, or where lynx habitat naturally narrows between blocks. Connectivity provided by linkage areas can be degraded or severed by human infrastructure such as high-use highways, subdivisions or other developments.* (LCAS Revised definition, Oct. 2001).

Alpine tundra, open valleys, shrubland communities and dry southern and western exposures naturally fragment lynx habitat within the subalpine and montane forests of the Southern Rocky Mountains. Because of the southerly latitude, spruce-fir, lodgepole pine, and mixed aspen-conifer forests constituting lynx habitat are typically found in elevational bands along the flanks of mountain ranges, or on the summits of broad, high plateaus. In those circumstances where large landforms are more isolated, they still typically occur within 40 km (24 miles) of other suitable habitat (Ruggerio et al. 2000). This distribution maintains the potential for lynx movement from one patch to another through non-forest environments.

Because of the fragmented nature of the landscape, there are inherently important natural topographic features and vegetation communities that link these fragmented forested landscapes of primary habitat together, providing for dispersal movements and interchange among individuals and subpopulations of lynx occupying these forested landscapes. Landscape connectivity may take the form of narrow forested mountain ridges or plateaus connecting more extensive mountain forest habitats. Wooded riparian communities may provide travel cover across open valley floors between mountain ranges, or lower elevation ponderosa pine, pinyon-juniper woodlands or shrublands that separate high elevation spruce-fir forests. It is anticipated that where sagebrush communities are proximal to forest habitats, they may also prove valuable to lynx in the Southern Rockies.

The identification and mapping of potential lynx linkage areas and connective shrub-steppe habitats for lynx in Colorado and Wyoming was agreed to in the Conservation Agreement (#00-MU-11015600-013, 2/07/2000), between the Forest Service and US Fish and Wildlife Service, and by the BLM under a different Conservation Agreement. This mapping effort was initiated in January, 2002, by an interagency team, and further refined at the local level, by including consideration of local information and conditions.

The interagency team consisted of representatives from: U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, U.S. Park Service, Colorado Division of Wildlife, Federal Highways Administration, Colorado Department of Transportation, and the Colorado State Forest Service. The National Lynx and Wolverine Interagency Steering Committee reviewed them in October, 2002.

The following is a brief narrative description of the 38 lynx linkages mapped within the Southern Rocky Mountain Geographic Area: (See Figure 1 in Chapter One (page 3) of the EIS for a spatial display).

1. **Sierra Madre:** This area provides for movement north-south through the Sierra Madre to the Routt National Forest LAU's.
2. **Snowy Range:** This area provides a Colorado to Wyoming connection through Snowy Range. Other wildlife species that use this habitat for travel include a wolverine sighting and big game use.
3. **Northgate:** This area provides east to west movement opportunities from the Medicine Bow Range to Sierra Madre, near the Colorado-Wyoming border.
4. **Bull Mountain:** This linkage area connects Redfeather LAU to Bull Mountain, which has FS and BLM lynx habitat. This linkage is located entirely within the Arapaho-Roosevelt National Forest.
5. **Gould:** This linkage area connects the west side of the Rawahs from Owl Mountain LAU on the Routt to the Laramie LAU on the Roosevelt, through the Colorado State Forest. The majority of the area is through State Forest land, and it connects the LAUs on the two National Forests.
6. **Muddy Pass:** This linkage area provides for movement across shrub-steppe habitats from Rabbit Ears Pass to the Park Range. It has mixed land ownership.
7. **Egeria:** This linkage area provides for movement opportunities from the Flattops (White River Plateau) east to the Routt, and includes mixed land ownership.
8. **State Bridge:** This linkage area provides for movement across shrub-steppe habitats from the Gore Range to the Sheephorn area, and has mixed land ownership.
9. **Castle Peak:** This linkage area provides for movement across shrub-steppe habitats between the Flattops (White River Plateau) east to Castle Peak, and has mixed land ownership.
10. **Glenwood:** This linkage area provides for movement between the Flattops, south through Glenwood Canyon, and then across shrub-steppe habitats to the Red Tables. Underpasses of I-70 are in place (e.g. Bair Ranch). There is mixed land ownership within this linkage area. There are several existing barriers to movement: Glenwood Canyon, the Colorado River, the railroad and Interstate 70, so remaining crossing areas are in need of maintenance/protection.
11. **Dowd Junction:** This linkage area is west of Vail, and is a north-south connection with an existing underpass and fencing. At Dowd Junction, there is an intersection of highway and interstate, with two drainages intersecting as well. The Colorado Division of Wildlife has identified it as a major problem area for elk. Some data has been collected on animal use with cameras. It is also an important crossing area for deer, elk and lion. There is residential and commercial development on both the north and south sides of this linkage area.

12. **Vail Pass:** This linkage area provides movement areas from approximately Timber Creek to Guller Creek. The area crosses I-70 and has high winter recreation use. The area mapped for this linkage area is the best remaining place for animals to cross I-70 in the Vail area, based on terrain features, habitat and lack of development. There is a potential to develop underpasses – as there is only one currently in place under west-bound lanes.
13. **Officer's Gulch:** This linkage area is a north-south connection of the Tenmile Range and Leadville with the Eagles Nest wilderness. It is the best remaining crossing area between Copper Mountain and Frisco, based on terrain, habitat and lack of development.
14. **Loveland Pass:** This linkage area provides for north-south movements near I-70 at the Continental Divide, Peru Creek, Loveland Pass, Laskey Gulch and Jones Gulch. It includes portions of the White River National Forest and the Arapaho-Roosevelt National Forest. Some portions of the linkage are highly developed, with I-70, ski areas and towns.
15. **Berthoud Pass:** This linkage is in an area with existing high volume highway and ski developments, where there is potential for additional development. This linkage covers both sides of the Continental Divide where lynx habitat is fairly well-connected, but human influence is high.
16. **Herman Gulch:** This linkage area straddles I-70 for approximately 4 miles between the Herman Gulch area and Bakerville. It connects lynx habitat on both sides of a very high traffic volume interstate highway. The linkage area is needed to maintain existing connectivity, and improve the permeability of I-70 and the frontage roads.
17. **Fraser Valley:** This linkage area is a north-south connection to northern Colorado, from the Fraser Valley, connecting subalpine forests along the west slope of the Continental Divide in a narrow area between alpine and private land.
18. **Guanella Pass:** This linkage area is a North-south connection across a divide between the Pike-San Isabel and the Arapaho-Roosevelt National Forests, through a narrow alpine willow corridor on a high elevation mountain pass (Guanella Pass). There are several potential impediments and threats to connectivity, including a two lane highway and recreational developments.
19. **Kenosha Pass:** This linkage area provides for north-south movements and east/west movements near Kenosha Pass. Connectivity is threatened with potential for highway upgrades and urbanization within South Park.
20. **Georgia Pass:** The area within this linkage is the best forested, and least developed habitat connection that provides for north-south movements from South Park across the Continental Divide to Summit County. It connects to the Loveland Pass-Peru Creek connections.
21. **Tennessee Pass:** This linkage area provides for major connections between blocks of habitat, tying the Sawatch Range to Summit County and into a habitat block near Vail Pass. It includes a portion of Fremont Pass and connects the Snake and Arkansas River drainages.
22. **Clear Creek:** This linkage area includes a narrow forested corridor across Highway 24. It connects suitable blocks of habitat to each other through an open, lower elevation block of non-habitat. The existing threats to connectivity include highway crossing concerns.

23. **Cottonwood Pass:** This linkage area provides an east-west connection from the Collegiate Range to Taylor Park in the Sawatch Range, with a narrow forested corridor. There is heavy snowmobile use and a recent highway upgrade.
24. **Poncha:** This linkage area provides for movement between the San Juans to the Sawatch and Sangre de Cristo Ranges. It connects central Colorado to southern Colorado and is very important connection. The topography pattern and vegetation results in a funneling north-south connection near Poncha Pass. It also includes Monarch and Marshall Pass as they provide a series of habitat and terrain features that provide a “stepping stones” type series of connections.
25. **Black Mountain:** This linkage area provides a connection of the Sangre de Cristo range to the Wet Mountains. It includes a very narrow corridor of pinyon-juniper habitat for cover, which is the only forested canopy habitat available. It has mixed land ownership.
26. **LaVeta:** This linkage area provides north-south movement opportunities between the Sangre de Cristo range to the Culebra Range and the Spanish Peaks. Threats to habitat connectivity include crossing Hwy. 160. This linkage connects major blocks of habitat through shrub-steppe habitat and pinyon-juniper habitat.
27. **Trinchera:** This linkage area provides an East-West connection from the Culebras range to the Spanish Peaks, and includes Cucharas Pass. There is some mixed ownership. Threats are Hwy 12, Cuchara Ski Area, large ranches and subdivisions on west side that are and have been logging and building roads. Linkage refined to protect the critical area of undeveloped habitat on the NF.
28. **Cochetopa Hills/North Pass:** This linkage area provides for North-south movements from the San Juans to the Sawatch Ranges. It is a well-used movement corridor by lynx. North Pass (Highway 114) is a potential barrier or impediment to movements.
29. **Slumgullion Pass:** This linkage area includes the Spring Creek and Indian Creek areas. It provides a north-south connection between Lake City to the Creede area, with threats that include highway crossing problems (Hwy 149).
30. **Wolf Creek Pass:** This linkage area includes areas on both sides of Hwy 160, and provides for north-south movement. Lynx mortality at Pass Creek on east side of pass documents it is being used by lynx. Threats include a high volume, two lane highway, which is currently being upgraded.
31. **North la Plata:** this linkage area includes the ridgeline above Hermosa Creek, which connects the Lizardhead and Molas area to the La Plata Peaks block of habitat. IT incorporates the Divide Road, and the narrowest segment of spruce-fir habitat from north to south, which is fragmented both naturally and by past harvest activities.
32. **Lizard Head Pass:** this linkage area includes Lizard Head pass (Hwy. 145) to Rico to East Hermosa Triangle. Threats to lynx movements include highway crossing problems for the east-west connection and subdivision development. Lynx habitat is disjunct near the Pass, but highway crossing is important all along the linkage area. The area provides movement opportunities between blocks of habitat as well as maintaining permeability across highway.
33. **Molas-Coalbank Pass:** this linkage area includes areas on both sides of Molas Pass, Coalbank Pass and Silverton, due to the high volume highway and associated crossing concerns. It provides an east-west connection to habitat blocks on both

sides of the highway. Highway 550 is high volume traffic and a potential barrier and mortality factor for lynx. There is documented lynx use in area. It extends to the South Mineral portion of Red Mountain Pass linkage, and has a shared linkage boundary at Deadwood Gulch.

34. **Red Mountain Pass:** This linkage area covers lynx habitat surrounding highway 550 from Silverton to Ouray. It is an east-west movement corridor with potential highway crossing problems on Hwy. 550. It includes the South Mineral drainage to provide a connection west towards Lizardhead. This linkage is needed to maintain/improve the permeability of the highway and to maintain connectivity within S. Mineral drainage.
35. **Silverton-Lake City:** This linkage area provides for lynx movements between Engineer Pass and Cinnamon Pass, through alpine habitats with scattered patches of willow. It is a well-documented lynx movement area.
36. **Dallas Divide:** This linkage area connects the Uncompahgre Plateau to the San Juans (Sneffels Range). It is entirely private land, therefore no standards and guidelines from the LCAS would apply. Conservation groups or the county could work towards conservation easements, etc. to maintain connectivity within this linkage.
37. **McClure Pass:** This linkage area connects a large area of central Colorado mountains with the Grand Mesa. There are possible highway crossing problems (Hwy. 133) and a great deal of winter recreational use.
38. **Battlement Mesa:** This linkage area connects the Grand Mesa to Battlement Mesa through non- lynx habitat.